

3. (First amended) -- The surveillance system in accordance with claim 1, wherein said signal generating means activates a microphone for receiving audible information of said individual[s] located in said area. --

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4. (First amended) -- The surveillance system in accordance with claim 1, wherein said signal generating means activates at least one [secondary] high resolution camera. --

REMARKS

Applicant respectfully requests reconsideration in the above-identified patent application.

Claims 1-3 have been rejected. Claim 4 has been objected to. Claims 1-4 have been amended. Claims 1-4 remain in this patent application.

The Invention

The present invention is a surveillance system that, in its simplest form, studies specific points of interest of an image within a camera's view. Various characteristics of these selected points are measured and compared with known characteristics to predict future movements of those points, and therefore establish an intent of the image being recorded. The present system uses logic similar to that of a human in protecting its environment. For example, if a person is standing alone at a bus stop at night and a second person casually approaches in full view and stands no closer than four feet, it is likely that the first person

will not be alarmed. The first person would have determined that the second persons movements are normal. If the second person suddenly approached the first, the first person would immediately decide that this quick movement is unusual, considering the particular environment, and would be alarmed. The present invention performs a prediction-analysis on each image detected within its view to determine probable intent of each image. The system may trigger an appropriate alarm, depending on the application, when a particularly prediction of movements matches predetermined movements, e.g., those of a criminal nature.

35 U.S.C. 103 Rejections

The Examiner has rejected claim 1 under 35 U.S.C. section 103 as being unpatentable in view of U.S. 5,097,328, issued to Boyette. The Examiner states that Boyette discloses a television surveillance system including a video camera, imaging arrays for sampling movements of individuals for motion to determine specific activity (col. 12, lines 40-51). The Examiner states that the term "criminal activity" (used in the originally filed claims of the present application) cannot add patentability to an otherwise known system. The Examiner contends that it would have been obvious to anyone having ordinary skill in the art of image analysis to train a surveillance system to recognize any desired known behavior patterns.

The purpose of the '328 patent is to provide a system for detecting the presence or absence of a person. The system of the '328 patent uses "blob analysis" to determine if a bank teller, for example, is at his or her station and perhaps therefore ready to help the next customer on line. According to the '328 patent, a camera is used to input pixel data of a

prescribed area (the area around each teller window, for example) which is compared with pixel data stored in memory to determine if there the pixels seen by the camera represents a person or not a person. The '328 system is dedicated to determining whether the "blob" of recorded pixels in a prescribed scene are similar to known pixels of a human. If the "blob" of pixels moves over time, the '328 system can determine if the movements are indicative of the movements of a human. In all cases, the '328 system determines if a human is there or not there, no more.

In contrast, the present invention, as defined by the claims, performs complex pixel analysis to determine the exact position, velocity, and acceleration of specific pixel points to predict future movements of those specific points, i.e., the intent of the particular movement (by human, animal, or by a mechanical device) within a surveyed environment. To illustrate the benefits of the present invention compared to the system disclosed in the '328 patent, the following example is provided wherein a surveillance system, according to the present invention is surveying an automated teller machine (ATM).

EXAMPLE:

A first person is detected at the ATM late at night by a nearby surveillance camera. The simple, non-jerky and relaxed movements of the limbs of the first person is detected using complex pixel analysis. These particular movements are immediately compared with stored pixel movements and it is determined that this first person located in the camera's view is not moving in a manner that is indicative of one having criminal intent (i.e., is trying to break the ATM, for example), and therefore, no alert is triggered. The

surveillance system has determined that the future movements of the first person will continue to be smooth and non-threatening. A second person, as recorded by the camera, quickly approaches the first person and is moving his limbs in a jerky manner. The present system again compares the movements of the images in the camera's view and determines that the jerky movements of the second person's limbs compares with movements that are considered "abnormal" and suspicious for the particular environment.

The present system (in this example) has predicted that the future movements of the second person may affect the safety of the first person and decides to study the scene further and perhaps in greater detail. At this early stage of "investigation", an alarm (audible to at least first person) may be activated based on the fact that the second person is moving unusably fast towards the first person and that it is likely that the second person has criminal intent (wants to rob the first person).

Once alarmed, the first person is warned of the second person and proceeds accordingly. Should the second person simply run past the first person (perhaps if he was merely a jogger running at night), the surveillance system "relaxes" back to an "environment is normal condition" and disables the alarm. If, however, the two images (the first and second persons) become intertwined into a single image for a measured time period and detected limb points show movements that compare to that of a struggle (as compared to stored limb-movement information), the present system will recognize that a criminal activity is now in progress and will send an appropriate alarm (depending of the level of urgency) to the police or appropriate security.

In contrast, if the '328 system were installed to protect this exemplary ATM environment, it would only be able to determine that there are TWO images that appear to be humans in the environment. It would not be able to predict future movements of the images to determine their intent. In other words, the system of the '328 patent uses "blob analysis" because that is all it is interested in, detecting the presence or absence of "blobs". In contrast, the present system studies specific points of each "blob" to compare movements with known movements and then determine the probable intent of at least one "blob" within the environment. The present system actually predicts the intent of an image under surveillance so that a possible crime could be thwarted even before it occurs. This feature is neither disclosed nor suggested by the prior art, including the '328 patent.

Applicant has amended independent claim 1 to emphasize that sampled movements of an image are compared with known movements to predict the future movement of those sampled movements and thereafter generating a signal responsive to predetermined predicted future movements.

Other amendments to claims 1-4 were made to improve their readability.

Since none of the references cited by the Examiner disclose or even suggest the predicting feature of the present invention, as clearly defined by the present claims, the obviousness rejection to claims 1-3 is overcome and should be withdrawn.

The Examiner has further rejected claims 2 and 3 under 35 U.S.C. section 103 as being unpatentable over U.S. 5,097,328, in view of U.S. 4,337,482 (issued to Coutta).

This obviousness rejection of claims 2-3 is considered moot in view of the amendments made to independent claim 1, from which claims 2 and 3 depend, and the above remarks.

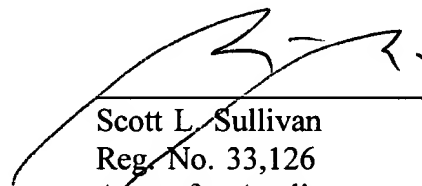
Applicant acknowledges that claim 4 is objected to as being dependent upon a rejected claim and is considered allowable if rewritten in independent form including all limitations of the base claim and any intervening claim. Applicant contends that claim 4 is allowable over the prior art in view of the above amendments and remarks.

No new matter has been entered.

A petition for a one month extension of time and the requisite fee accompanies this amendment.

Based on the amendments and remarks made herein, Applicant contends that claims 1-4 are in condition for allowance and that such action is earnestly solicited.

Respectfully submitted,



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